BHUWAN SHARMA

Computational Systems Biologist

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LINKS

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SUMMARY

I focus on understanding biological systems through their underlying network structure, using machine learning and deep learning models that explicitly account for molecular interactions, topology, and biological context. My background centers on graph-based representations of biological networks and the integration of sequence, functional, and topological information into unified learning frameworks. I am particularly motivated by problems where model design, biological structure, and interpretability must align, such as biomarker discovery and network-level inference. In the long term, I aim to develop principled, scalable computational methods that move beyond black-box prediction toward mechanistic and clinically meaningful insights.

EDUCATION

University of North Bengal | 2023 – 2025
M.Sc. Bioinformatics
Trained in computational systems biology, with strong emphasis on machine learning-driven analysis of high-dimensional data.

Kalimpong College | 2020 – 2023
B.Sc. Zoology (Honours)
Strong foundation in biological sciences with emphasis on molecular biology and genetics.

SKILLS

1. Statistical Modelling
   - Principal Component Analysis (PCA)
   - Principal Component Regression (PCR)
   - Linear & Multivariate Regression
   - Correlation and Partial Correlation Analysis
   - High-dimensional Statistical

		Modeling for Omics Data
		• Network-based Statistical Inference
2. Programming		• Python (NumPy, Pandas, PyTorch, PyTorch Geometric)
		• R (limma, edgeR, clusterProfiler, biomaRt)
		• Familiar with C, Java, and Perl
3. Machine Learning		• Supervised & Semi-supervised Learning
		• Feature Engineering for Multi-modal Biological Data
		• Representation Learning (non-transformer, non-GNN)
		• Regularization & Generalization in High-dimensional Settings
4. Deep Learning		• Graph Neural Networks (GCN, GATv2)
		• Transformer-based Models (DNABERT, BioBERT)
		• Sequence and Ontology Embedding Learning
		• Multi-modal Deep Learning